

Green ICT Meets Solar Energy Solution Phase 2

Electrotechnology ICT & Design Faculty
+ ICT Services Unit



Executive Summary

One of the Global drivers for change is environmental sustainability. There is an impetus for organisations to review their practices to ensure a sustainable future.

Together with the trend to increase the use of technology the questions must be asked “What is the ecological impact of these increased demands?” and “What resources are consumed in their provision?”

The ICT & Design Faculty considered these questions and determined what it could do to lessen the impacts and consumption of resources. These and other questions inspired the Faculty’s call to identify real innovative solutions to environmental sustainability.

The first phase of the Faculty’s initiative was to secure funding through the Institute’s Bright Ideas Project. Through the findings of the research we were able to focus on what could be done to cut down on carbon emissions through the use of technology based tools and products.

The intelligence gathered enabled us to test, review and implement Green ICT solutions in a unique and innovative way.



The outcome of the research and trial enabled the team to provide strong recommendations for improvement within the Institute's ICT infrastructure.

The Faculty has initiated the following highly innovative, cost-effective solutions:

- Green PCs that use 10% of energy consumption compared a standard DET PC –a Green PC uses 8 watts of power
- Introduced low power consumption computer screens
- Introduced solar solution to power ICT Services main server room located at Macquarie Fields College –10 Kw of power to battery backups (UPS) -56 solar panels installed on top of B Block
- Established and implemented the ICT Equipment Recycling Strategy –details below
- Built the capability and awareness of Faculty staff within Green sustainability solutions

Overall, the project was successfully implemented within the Institute. Preliminary results were showcased at the 2010 TAFE NSW Quality Awards, the impact of this innovative project has raised great interest across TAFE NSW. The final results of this project will be documented in a final report and distributed to key stakeholders who have requested this information.

The potential for this project will have exponential benefits, not only in its cost effectiveness but in its contribution toward an environmentally sustainable future. The team has demonstrated excellence in its ability to be innovative in its sustainable solutions!

Team Achievements

Green PCs (New Green Smart Technology)

The main aim of this trial was to minimise the power consumption and carbon footprint without compromising the user functionality and efficiency. A project plan was developed which consisted of key phases: research, identification of solutions to be trialled, blind testing (testing with other stakeholders without us influencing the results, thus providing an unbiased outcome) and solutions, data analysis and communications. The team conducted several focus groups with different technologies such as: virtualisation, thin client and the new “mini PC” solutions. Test groups were initiated to provide feedback and suggested improvements. Technical interviews were conducted with stakeholders who had tested the various solutions.

Findings were provided to external contributors (industry consultants) as the results could verify or disprove their claims. This has had an add-on effect of building external relationships.

The initial trial consisted of the testing of six (6) mini PCs in conjunction with an evaluation of a standard computer based classroom which consists on average 20 Lenovo corporate standard computers, with a standard operating environment (SOE) and LCD monitors. Through the success of this trial, phase 2 resulted in SWSI funding two corporate classrooms and provision to manage two print stations in libraries by using this technology. During the second phase of the project, the team has now expanded to include ICT Services.

Solar Energy Solution Pilot

Through the research that was conducted it was highlighted that a solar solution for main ICT infrastructure was an emerging area. The team sourced additional funding through the Better TAFE Facilities (BTF) funds. The aim of this request was to put forward a proposal that would be highly beneficial to the current SWSI ICT infrastructure and to further support the sustainability commitment of our Institute.

Through negotiation this was achieved successfully.

57 solar panels were installed on the roof of K Block (Macquarie Fields College) directly on top of the main server room 2 x 5 Kw (10 Kw) systems were installed the energy received through this system is being directed into the server room main battery system thus creating constant power provision, also the overflow of power is being used within the college

Any excess power generated returns to the energy grid. The project was completed on time and within budget. The Solar Energy Solution pilot has been evaluated and has been included in the top ten priorities for minor works for further rollouts within the Institute.

ICT Recycling Strategy

All sections within the ICT & Design Faculty have an ICT Replacement Plan which includes equipment replacements, roll down plans and break up of components for use in teaching and learning and support to Child Care centres within the Institute.

The Faculty recycles the ICT Services Unit's redundant equipment eg 40 servers were relocated to Information Technology sections for use in their delivery, 100+ computers were relocated to IT sections to rebuild computers for use in their simulated workplace delivery rooms.



Impact on improving business outcomes

COSTS

| Green PCs | Solar Energy | ICT Recycling Strategy |
|---|--|---|
| <p>Current Institute computer power consumption (idle stage) uses an average of 96 watts. Calculating at \$0.10 a watt for 20 computers in an average classroom, equates to \$936 per year, or \$140,400 per year based on 3,000 computers. By using the Green PC solution in an office of 20 computers this equates to, \$49.92 per year or \$7,488 per year based on 3,000 computers.</p> | <p>\$89,000 to implement a 10Kw solar solution with 57 solar panels. As the pilot continues through 2011, we will be able to review the cost savings through the energy provided through this system. Lifespan of this new solution is 20 years.</p> | <p>By using recycle items from existing equipment, the Faculty is reducing its bids on capital equipment and maximising its productivity and efficiencies “a winning solution”.</p> |

Efficiencies

| Green PCs | Solar Energy | ICT Recycling Strategy |
|---|---|--|
| <p>The Institute has a potential of direct savings of \$132,912 per year. Indirect savings have not been calculated as there would be further cost efficiencies such as air conditioning and other power consumption items.</p> | <p>It provides constant electricity to the uninterrupted power supply (UPS – battery). This provides redundancy of power to keep main core servers within SWSI alive.</p> | <p>The recycling strategy provides equipment for students to use to practise their developing skills in a simulated environment. Other areas such as Childcare centres are able to benefit through refurbished machines without additional costs –students have the opportunity to treat Childcare centres as their clients.</p> |

Impact on the Environment

| Green PCs | Solar Energy | ICT Recycling Strategy |
|--|---|---|
| <p>To power approximately 3,000 computers within the Institute it would take approximately 480 Kgsof CO₂e, it would take 1,516,320 Kgsof CO₂ to produce the power to supply energy to all of these computers. Using Green PCs, it would only produce 3 Kgsof CO₂e. This would need a total of 80,870.4 Kgsof CO₂ to power these computers.</p> | <p>Alternative renewable energy being used to supply power in an area of where it has not been used before. Apart from reducing our carbon footprint, we are further supporting the Commonwealth agenda in renewable energy and sustainability.</p> | <p>We are maximising the use of equipment through this strategy, thus minimising the impact on the environment of a “throw-away society”.</p> |

Reputation

The Team and the Faculty is committed to a sustainable solution and as such is earning a reputation of being innovators, environmentally conscious and forward thinkers.



Reflections

Green ICT and Solar systems is a challenging area within the Information & Communications Technology industry and it is very much aware of the need to move toward ICT sustainability. Most areas within ICT are still discovering and formulating strategies to meet the new targets being set either by company policies or government initiatives. However meeting these targets must not compromise IT solutions already in place with lesser technology solutions and/or higher costs.

The Team has been able to provide real sustainable and cost effective solutions today and is continuing its research and development to find solutions for tomorrow.

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SunConnect–Solar Panel Solutions

DLinkAustralia -Country Green Initiatives

Acknowledgements:

IT Support Officers

Macquarie Fields Library Staff

Macquarie Fields College

Padstow Library Staff

MBISC Staff IT Teaching Section –Campbelltown

Telecommunications Teaching Section –Lidcombe